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ABSTRACT

This report provides results of a 1981 assessment of the condition of South Carolina's higher education facilities and presents recommended actions. It is noted that at a national level, the nation's colleges and universities have slowly begun to realize that the condition of their physical facilities is declining, a fact that prompted South Carolina in 1979 to work towards bringing all its own higher education buildings up to a satisfactory standard. Study findings include: a lack of accurate and usable information on facilities at the State level; a considerable number of buildings that are now reaching the end of their useful life cycles for major building components such as roofs and mechanical systems; and a chronic shortage of funding during the 1980s for State colleges and universities. Overall, the report: (1) reveals the need for the State to improve its ability to track maintenance needs at its colleges and universities; (2) suggests that the State must begin recognizing the importance of the deferred maintenance crisis and accept the reality that its colleges and universities do not have the capacity to catch up without extraordinary funding; and (3) indicates that the institutions must be held accountable for stopping the growth of deferred maintenance. Conclusions and recommendations are provided. (GLR)

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SOUTH CAROLINA

HIGHER EDUCATION

DEFERRED MAINTENANCE PROBLEMS

1981-1991

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1981 - 1991

This report was reviewed and accepted by the Commission's Facilities Advisory Committee on April 9, 1992. Subsequently, it was endorsed by the Commission's Committee on Facilities at its meeting of May 18, 1992. The Commission on Higher Education adopted the report at its meeting of June 4, 1992.

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1. Deferred Maintenance as a National Crisis

For at least a decade our nation's colleges and universities have slowly begun to realize that the condition of their physical facilities is declining at an alarming rate. The push to add space to accommodate increasing enrollments in the 1950s, 1960s and 1970s apparently came at the expense of normal routine maintenance of existing buildings. In the 1980s and early 1990s it appears that budget constraints have replaced new construction demands as the number one enemy of necessary building maintenance.

National concern over this problem culminated in a 1989 study entitled The Decaying American Campus - A Ticking Time Bomb, which was conducted jointly by the Association of Physical Plant Administrators of Universities and Colleges (APPA) and the National Association of College and University Business Officers (NACUBO), in cooperation with Coopers and Lybrand. That study revealed the following alarming statistics:

a. Since 1950, college and university facility space has more than quintupled and now represents some 3 billion gross square feet of classrooms, laboratories, libraries, offices, dormitories, and other space.

b. American institutions of higher learning would have to invest approximately $300 billion to reconstruct their facilities today.

c. The capital renewal and replacement needs of U.S. colleges and universities are currently **estimated at $60 billion**.

d. Priority repairs and renovations or "urgent needs" **require an estimated $20.5 billion** of the total $60 billion.

e. Facility reinvestment has not kept pace with the growing need. **Colleges and universities deferred $4.00 of needed maintenance for every $1.00 spent in 1988**.

f. Classroom, laboratory, and library space were the three most frequently cited priorities for construction and renovation.

Realizing that South Carolina likely reflected the nation in this growing problem, the Commission on Higher Education initiated a study in 1981 to assess the condition of South Carolina's higher education facilities.

2. South Carolina's Building Quality Survey - 1981

In 1979, the South Carolina Master Plan for Higher Education committed the Commission to work with its public colleges and universities to bring all buildings up to a satisfactory standard. By definition, "satisfactory" refers to a facility that is "suitable for continued use with

normal maintenance." To reach this goal, the J.E. Sirrine Company of Greenville was commissioned to survey facilities in accordance with the Commission's Building Quality Evaluation Manual. This procedure produces both a numerical score reflecting the condition of a particular facility and the estimated cost to rehabilitate the facility to a satisfactory level. While many buildings were excluded by definition from the study, it did serve to establish an overall rehabilitation need for each college and university at that point in time.

The 1981 Building Quality Survey (BQS) reported that 262 non-residential facilities would require an estimated $21.7 million to rehabilitate with an additional $21.0 million being needed for residential facilities. Sixty-six percent (66%) of the non-residential facilities and eighty-three percent (83%) of the residential facilities were rated less than satisfactory.

Several attempts were made during the decade to receive supplemental funding to begin to attack the deferred maintenance problem. For the most part, these efforts were largely unsuccessful. After the completion of the 1990 Building Quality Survey, the Commission desired to assess how institutions were able to address these deficiencies, as identified in the 1981 Sirrine study, during the previous decade with only their customary resources. This was to represent the fundamental purpose of this study. However, the scope of this examination was expanded to include other pertinent issues that appear to have contributed to the growing deferred maintenance problem in South Carolina.

3. Repair/Renovation/Maintenance Spending During the 1980s

The 1981 Sirrine study identified a rehabilitation need totalling $40.3 million for the facilities that we were able to track through 1990. In comparing each of these identifiable facilities from the 1981 Survey we were able to account for $124.1 million in **potential** rehabilitation expenditures. These buildings have a rehabilitation need reported in 1990 totalling $327.8 million.

However, in collecting the data for this study it became apparent that unreasonable assumptions had to be made in order to estimate the $124.1 million in building rehabilitation expenditures during the 1980s. No database currently exists at the State level to track permanent improvement projects on an individual building basis. For the purpose of this study, the Commission staff attempted to get a picture of overall maintenance spending by examining the historical record of permanent improvement projects. This was done by matching projects that appeared on the Division of General Services' Statewide Permanent Improvement Reporting System (SPIRS) with buildings reported in the 1981 Survey. Since little detail exists for many of these hundreds of projects, an assumption was made that all repair, renovation, or maintenance work in a facility would address some portion of the identified deficiency. This assumption, of course, is likely incorrect in many cases. Where multiple buildings were included in one project, an arbitrary proration was made based on building gross square footage.

Additionally, only projects which exceed $25,000 are tracked by SPIRS and therefore this study could not account for any rehabilitation work performed at a lower cost. This is not

necessarily inconsequential, as over a decade multiple projects under $25,000 could have taken place in any one building. Further, SPIRS was not initiated until 1984, meaning that work performed prior to that time had to be drawn from Commission minutes, which often lacked necessary detail. Finally, several institutions have consistently questioned the accuracy and results of the 1981 Sirrine study making its initial validity potentially suspect. In summary, each of these factors made this data too questionable for use in drawing defensible conclusions.

One of the problems that was revealed by this exercise is the lack of accurate and usable information on facilities at the State level. First, while the BQS methodology remains sound, we can not continue to base policy on data that is independently ascertained by the institutions. The problem is not with institutional effort or cooperation, but instead with the inevitable differences that occur in applying the methodology. Different professional judgements in assessing facilities make inter-institutional comparison impossible. In order to establish a baseline the Commission will need to consider having an independent party survey our institution's facilities, as was done in 1981. Interim updates can be provided by institutional personnel, but independent studies will be necessary at regular intervals to validate comparability. Second, the Commission needs the ability to track expenditures that address these identified rehabilitation needs. The on-going implementation of the facilities component of the Commission's Management Information System can allow us in the future to track this information with much greater accuracy.

Regardless of the inadequacies of the existing data, it is reasonable to assume that South Carolina is not significantly different from the rest of the nation in terms of its deferred maintenance problem. The National Science Foundation (NSF) recently reported in a study entitled Scientific and Engineering Research Facilities at Colleges and Universities: 1990 that for every $1.00 institutions plan to spend on facilities, $4.25 in needed repairs and renovations is being deferred (see **Figure 1**). This figure has increased from a $3.60 deferral rate in 1988. Consensus in South Carolina indicates that our colleges and universities are equally as unable to address their cyclical maintenance needs while at the same time establishing programs to eradicate backlogged maintenance. In fact, our institutions are exhausting their physical plant assets and accumulating a future bill that the State will one day be forced to address. This is evidenced by the enormity of need reflected in the 1990 BQS alone (an estimated $441 million). It is apparent that extraordinary means must

Figure 1

Nationally, for every $1.00 spent on facilities, $4.25 in needed rehabilitation is deferred.

be used to address the backlog. Annual plant allocations are not sufficient to address either the existing backlog of maintenance or the new deferrals that each year make the problem grow larger.

4. South Carolina's 1990 Deferred Maintenance Situation

South Carolina institutions are faced with several difficult dilemmas when considering deferred maintenance needs. For one, they must deal with facilities that are aged and require increasing amounts of annual plant expenditures just to maintain the status quo. **Figure 2** shows that 24.2% of this State's educational and general (E & G) space was built before 1940. These facilities have unique requirements due to their mode of construction. For instance, many times a deferred maintenance project in a facility of this age will trigger Building Code updates that can significantly escalate the cost of a given project. Institutions are faced with additional requirements for these buildings if they are of a historic nature and have been placed on a recognized historic register which restricts changes to the facility.

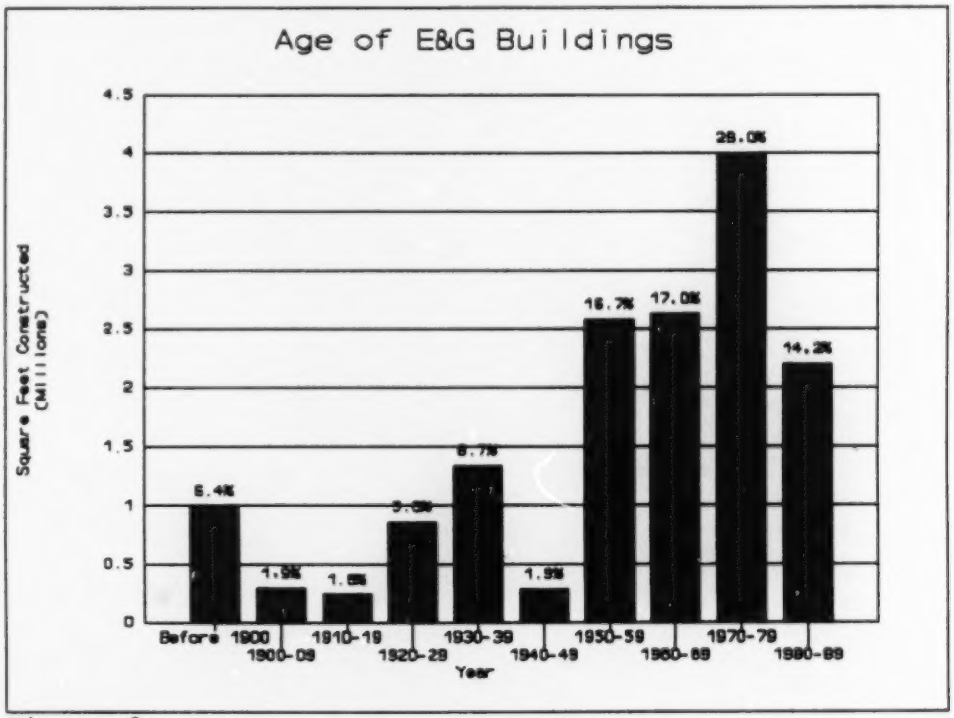

Figure 2

Another issue that is adding to the deferred maintenance problem is the number of facilities built in South Carolina between 1950 and 1979. These facilities account for approximately 59.7% of our institutions E & G square footage. Many of these facilities are now

reaching the end of useful life cycles for major building components such as roofs and mechanical systems. However, the continued lack of full State support in higher education funding has caused these items to be deferred. Further, many disciplines naturally evolve making these dated facilities undesirable, if not unsuitable, for instructional needs of the 1990s.

It is evident that South Carolina's colleges and universities experienced severe shortages of funding during the 1980s. **Figure 3** reflects the percentage of formula funding actually appropriated by the General Assembly during the previous eleven years.

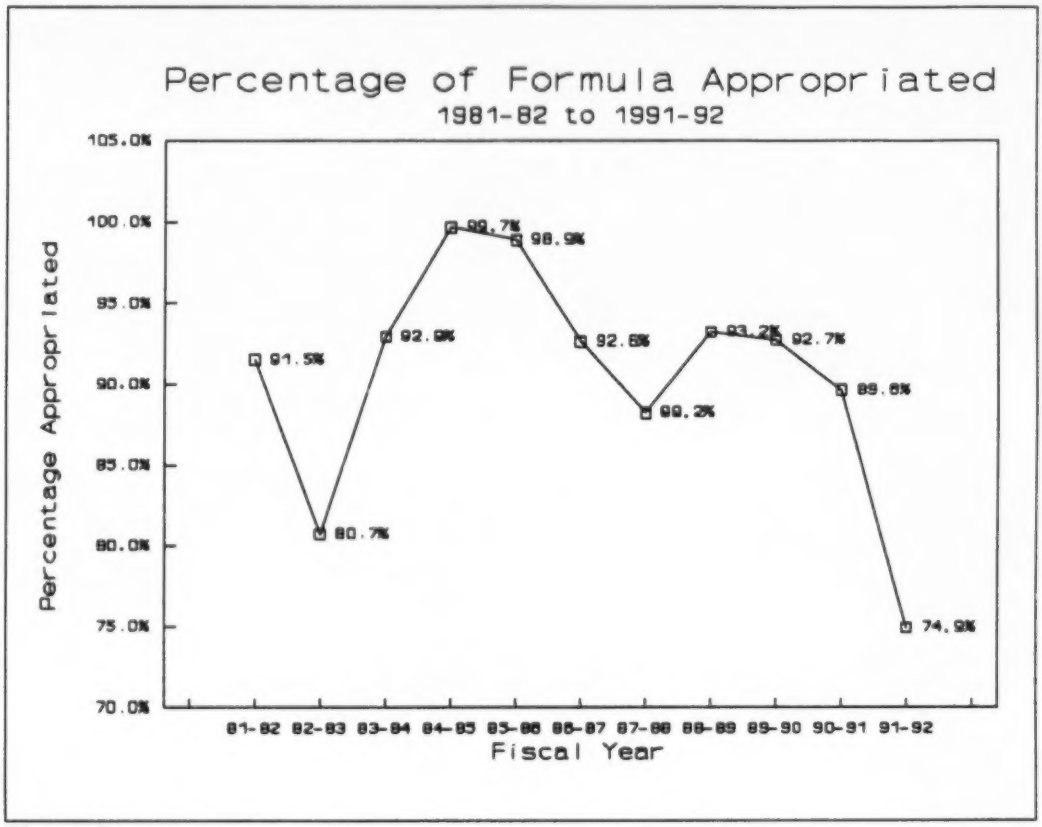

Figure 3

These figures reflect an average funding level of 90.45% over this time period with levels ranging from a current year low of 74.9% to a high of 99.7% in 1984-85. The second half of the decade of the eighties was marked by lower funding levels that have continued into the 1990s. In fact, the 1991-92 Appropriations Act provided a dismal 74.9% of the formula, while the 1992-93 Act continued the decline at 72.3% of formula.

When institutions are faced with budgetary constraints they often look first to the physical plant for cutbacks. Certainly maintenance cuts are easier to absorb than would be comparable cuts in salaries or instructional offerings. However, the practice of balancing the budget on the back of the physical plant inevitably leads to a backlog of deferred maintenance that will have to be repaid at the expense of these same protected human resources and programs. While an institution may be able to recover from one or two years of draining physical plant funds for other purposes, the practice over an extended time will lead to a guaranteed crises situation at a much greater cost.

Figure 4

Student Fees and State Appropriations Expended on the Plant

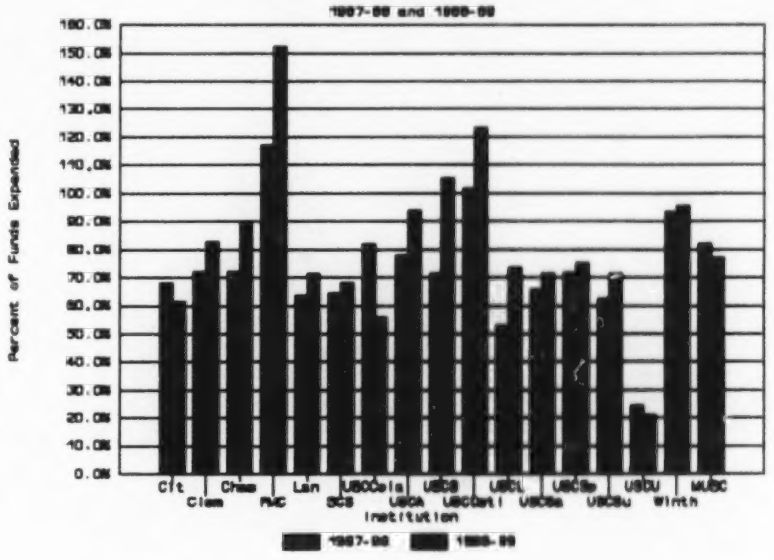

Figure 4 illustrates, for two recent years, how much each college and university spent in state appropriations and student fees compared to what the funding formula indicated was necessary for physical plant maintenance and operations. Higher education actually received 88.2% of full formula funding in 1987-88 and 93.2% in 1988-89. It could be argued that we can not expect our institutions to allocate full formula funding to the plant if they are receiving less than full formula allocations. However, if we accept the South Carolina formula as a valid indicator of the amount that should be spent each year on facilities, then any expenditures below that amount will logically create deferred maintenance. Obviously, the majority of our State's colleges and universities are choosing to reallocate these funds to seemingly more essential

programs. This represents further evidence of the consequences that have arisen by South Carolina's inability to fully fund higher education. While we may criticize individual management decisions at the institutional level, the State, through recurring inadequate funding, must also realize its share of the responsibility in creating this deferred maintenance problem.

In NACUBO's recent publication, Financing Capital Maintenance, Sean Rush, director of Coopers & Lybrand's National Higher Education consulting practice, concluded that "at the institutional level, governing boards must take existing facility needs into account when making resource allocation decisions. Better funding balance must be achieved between operating needs, new facilities, and existing facilities. Likewise, institutional managers must undertake ongoing, comprehensive facilities audits to determine both current and future requirements. In addition, they must begin the practice of generating capital internally by budgeting and funding building renewal allowances."

Other states have begun to address the problems associated with this practice of draining plant funds for other purposes, and have enacted policies to **require** a minimum level of expenditure to maintain facilities. For example, the State of Missouri recently adopted the following policy:

> "The capital budget for each four-year institution should include an amount for repair and replacement of physical plant in an amount equivalent to no less than 1 1/2% of the replacement value of that plant."

The State of Texas requires that at least 70% of an institution's space be rated as satisfactory before any new construction requests will be considered.

Another conclusion is offered by John A. Dunn, Vice President for Planning at Tufts University, in Financing Capital Maintenance. He suggests that "an institution probably needs to be providing between 2 and 4 percent of its current plant replacement value annually to deal adequately with plant renewal and adaptation needs, plus whatever catch-up maintenance is required. It is clearly best to build the funding for the renewal and adaptation needs into current operating support so that they are cared for on an ongoing basis. Catch-up maintenance can be debt funded over whatever period is needed."

The Commission's 1991-92 Work Plan includes the study of these and other state responses to the problem of growing deferred maintenance. Just as it is clear that colleges and universities must receive assistance in catching up on their backlogged maintenance, it is equally apparent that they must make a long term commitment to prevent the situation from continuing to deteriorate.

5. Conclusions

a. The Commission on Higher Education must work to improve the State's ability to track maintenance needs at its colleges and universities. The most important component in this

effort will be the continued development of the Commission's Management Information System (CHEMIS). Once this system is in place, the Commission should have the ability to track individual building needs and follow expenditures on those buildings. Additionally, the information will allow the Commission to make more objective decisions involving major funding issues.

An integral part of this essential information flow will be more reliable Building Quality Survey data. While the basic methodology of the Survey remains sound, the State should require more consistent information across the institutions that will require increased State level assistance and review. **To establish an accurate baseline the Commission should employ a third party to survey our facilities**. Extensive institutional input must be included in developing a Request for Proposals (RFP) to insure that the survey will be designed to offer reliable, mutually beneficial information. This third party should also be asked to design a method of tracking institutional progress in addressing these rehabilitation needs. We feel that it will be necessary to repeat this review at least every ten years. Intermediate updating could be accomplished by institutional input with State level review. This review can be accomplished, as it has in the State of Tennessee, through the use of a State level auditing team to review institutionally submitted information to insure statewide consistency. With these methods in place, the Commission can then rely on the BQS to make more informed funding decisions.

b. The State must recognize the importance of the deferred maintenance crisis and accept that our colleges and universities do not have the capacity to catch up without extraordinary funding. Once the Commission has accurate data, a renewed and strengthened emphasis should be placed on deferred maintenance as the Commission's number one priority with respect to facilities. This includes making funding requests to the General Assembly that will allow the Commission to allocate money to address deferred maintenance needs in priority order as expressed in the BQS. This funding should not preclude an institution from considering other methods of meeting their deferred maintenance needs beyond renovation of a given facility, but should require that the maintenance problem be fully addressed as a part of any given request. For example, construction to replace a facility that is beyond rehabilitation could be considered. Further, projects requested in the Overall Permanent Improvement Plan (OPIP) for capital improvement bond funding should continue to be heavily favored if they address needs expressed in the BQS.

c. Institutions must be held accountable for stopping the growth of deferred maintenance to the extent possible. The Commission should consider a policy to establish a minimal level of plant maintenance expenditures that must be met prior to seeking any State funding support for deferred maintenance or other necessary projects. Institutions unwilling to expend at least the amount allocated to them for physical plant maintenance should not expect the State of South Carolina to expend funds to continually make up the difference at the expense of other needed programs.

6. Recommendations

a. Develop and issue a Request for Proposals (RFP) in the 1992-93 fiscal year to employ a third party to survey all college and university facilities in accordance with the Building Quality Evaluation Manual. This RFP is to be prepared in consultation with the Commission's Facilities Advisory Committee.

b. Once the baseline is established through a new BQS, make deferred maintenance the Commission's number one facilities priority. This would include making all funding requests and decisions concerning permanent improvement projects in light of an institution's BQS needs.

c. Utilizing the new BQS recommended above, each institution will develop and submit to the Commission a Deferred Maintenance Plan. This Plan is to outline an annual work program, covering a ten year period, designed to result in each campus facility in use attaining a "satisfactory" rating. Annual progress reports will be submitted to the Commission. In addition to regular State appropriations, all maintenance renovation and reserve accounts and tuition collections will be identified as sources to fund the work addressed in the Plan. The Commission will not endorse any permanent improvement project requests outside the Deferred Maintenance Plan unless progress in meeting the needs identified in the Plan is on schedule.